Passive Probe

PM8932

Instruction Manual

9499 440 19011
780427/1

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Manual

PASSIVE PROBE
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Attenuation 100x

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1. INTRODUCTION

The PM 8932 is a 100x attenuator probe, designed for real time oscilloscopes up to 150 MHz, having a BNC input jack and 10 - 30 pF input capacitance paralleled by 1 MΩ.

2. SPECIFICATIONS

Electrical

Attenuation		100x ± 2 % (Oscilloscope input 1 MΩ ± 1 %)
Input resistance	d.c.	20 MΩ ± 2 % (Oscilloscope input 1 MΩ ± 5 %)
	a.c.	See curve Fig. 1.
Input capacitance d.c and l.f.		2 pF ± 0,5 pF (Oscilloscope input 1 MΩ ± 5 % paralleled by 10 - 30 pF)
Input reactance h.f.		See curve Fig. 1.
Bandwidth		Probe has negligible effect on oscilloscope bandwidth
Max. allowable voltage		Oscilloscope input 1 MΩ and voltage applied between probe-tip and earthed part of probe-body
– D.C. or d.c. + a.c. p-p		4 kV
– A.C. p-p		5,6 kV
– Derating above 1 MHz		See fig. 2
Test voltage		8 kV pulse, 2 ms < t < 5 ms
– Conditions		Temperature: 15 °C to 35 °C Relative humidity: 80 % Altitude: sea level
Check-zero button on probe shell		Same function , a O position of input coupling switch on oscilloscope

Environmental

Probe operation within specifications over the following ranges:

Temperature	–25 °C to +70 °C
Altitude	Up to 5000 metres (15000 feet)
Other environmental data	Same as for the oscilloscope the probe is used with

Mechanical

Dimensions	Probe body 137 mm x 11 mm dia (max.) Cable length 1500 mm Correction box 55x30x15 mm incl. BNC
Mass	incl. standard accessories 235 g

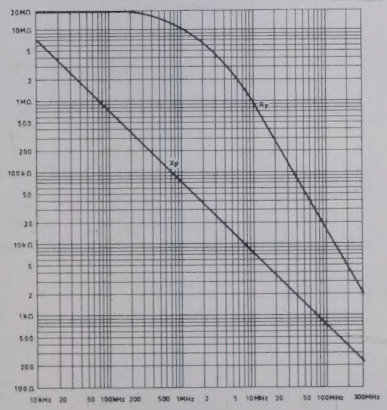

Fig. 1

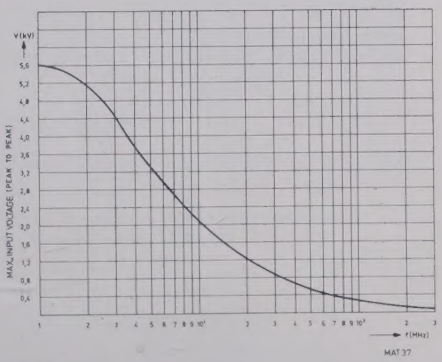

Fig. 2

3. ADJUSTMENTS

3.1. Matching the probe to your oscilloscope

The measuring probe has been adjusted and checked by the manufacturer. However, to match the probe to your oscilloscope, the following manipulation is necessary.
Connect the measuring pin to the CAL socket of the oscilloscope.
A trimmer C2 (Fig. 9) can be adjusted through a hole in the compensation box to obtain optimum square-wave response. See Fig. 3, 4 and 5.

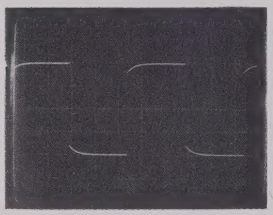

Fig. 3

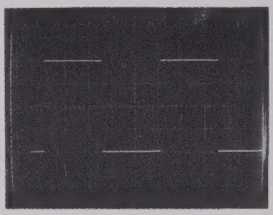

Fig. 4

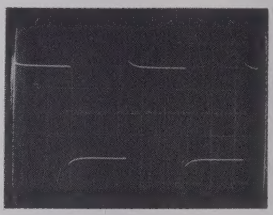

Fig. 5

3.2. Adjusting the h.f. step response

The h.f. step-response correction network has been adjusted by the manufacturer to match an average oscilloscope input. For optimum pulse response, however, the probe can be adjusted to match your particular oscilloscope. Later readjustment is only necessary if the probe is to be used with a different type of oscilloscope, or after replacement of an electrical component.
For the adjustment, proceed as follows.
Connect the probe to a fast pulse generator (rise time not exceeding 1 ns) which is terminated by its characteristic impedance. Dismantle the compensation box as described in section 4.2. Set the generator to 100 kHz. Adjust C3, C4, R2, R4 and R5 alternatively to obtain a display as shown in Fig. 6.
It is important that the leading edge is as steep, and the top is as flat, as possible. Incorrect settings of C3, C4 R2, R4 and R5 give rise to pulse distortions as shown in Fig. 7 and 8.

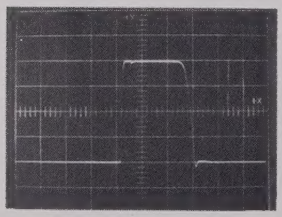

Fig. 6

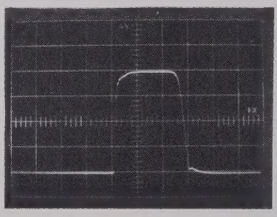

Fig. 7

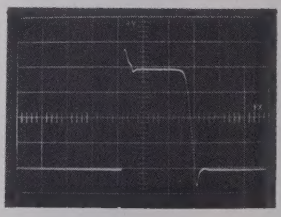

Fig. 8

3.3. Compensation range and l.f. response (see Fig. 9)

When the R.C.-assy (pos. 15, Fig. 9) has to be replaced, the replacement must be matched to the probe.

Procedure: Connect BNC-connector of PM 8932 to an oscilloscope
(1 MΩ ± 2 %; 15 pF ± 0,5 pF) e.g. Philips PM 3265.

3.3.1. Connect probe tip to a square-wave generator (f = 2 kHz ± 40 Hz; duty cycle 50 % ± 3 %)

3.3.2. Adjust for optimum square-wave response with C2 and C5.

Note: C-ring C5 can be shifted.

Set amplitude to 4 div. ± 0,1 div. The tilt of the square-wave must be ⩽ ± 0,5 mm.

3.3.3. Now solder C5 on to the connection wire to C1.

4. DISMANTLING

4.1. Dismantling the probe (see Fig. 9)

Part 15, R.C.-combination + holder with switch, form one integrated part. This part 15 can be screwed from cable assy 11. Probe shell assy 14 can be screwed from 15. When assembling the probe always first screw the probe shell assy on to part 15 before screwing 15 (+14) on to cable assy 11.

4.2. Dismantling the compensation box (see Fig. 9)

Unscrew the ribbed collar of the compensation box to the cable. The case 1 can then be slid of the compensation box sideways. The electrical components on the printed-wiring board are then accessible.

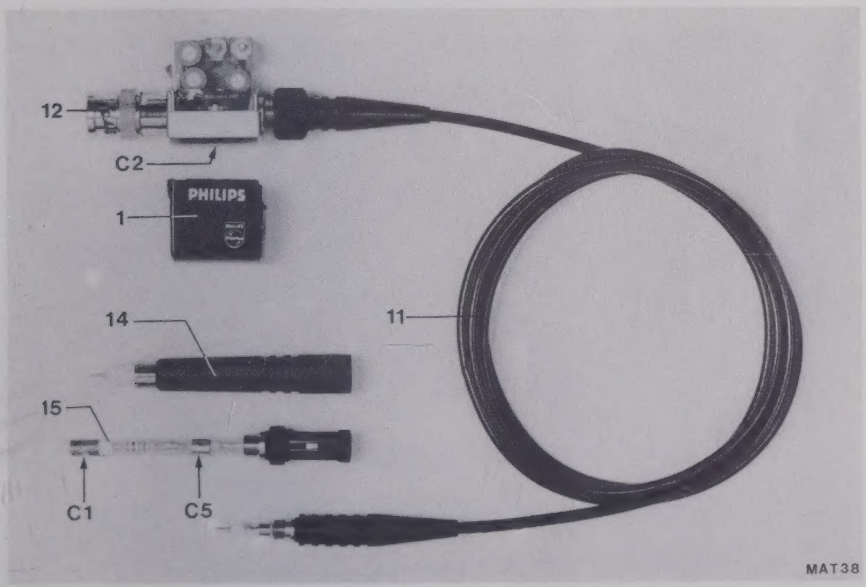

Fig. 9

5. REPLACING PARTS (Fig. 9 and 10)

5.1. Replacing part 15, RC-assy and holder with switch

Follow procedure in accordance with section 4.1.
After replacement the combination has to be readjusted in accordance with sections 3.1. and 3.2.

5.2. Replacing the cable assembly

Dismantle the compensation box as described in section 4.2.
Unsolder the connection between the inner conductor and the printed-wiring board. Keep the frame of the compensation box steady and loosen the cable nipple with a 5 mm spanner on the hexagonal part. Replace the cable and fit it working in the reverse order.

5.3. Replacing the BNC

Dismantle the compensation box as described in section 4.2.
Unsolder the connection to the printed-wiring board. Keep the frame of the compensation box steady and loosen the BNC with a 3/8 inch spanner. Replace the BNC and fit it working in the reverse order.

5.4. Replacing the probe tip

The probe tip screws into the insulating piece.
The damaged tip can be screwed out by means of a pair of pliers.

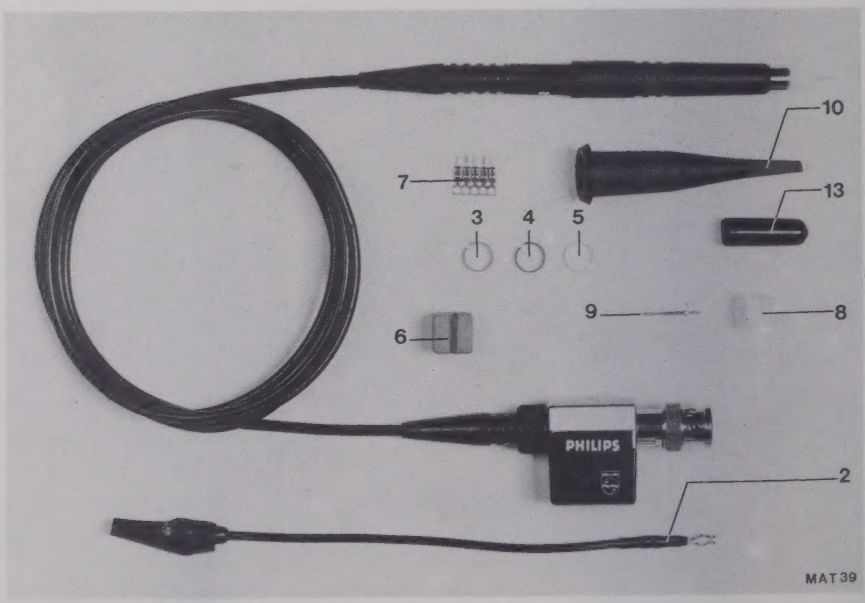

Fig. 10

6. PARTS LIST

6.1. Mechanical parts (see Fig. 9 and 10)

Item	Order number	Qty	Description
1	5322 447 64019	1	Cap
2	5322 321 20223	1	Earth cable
3	5322 532 64223	2	Marking ring red
4	5322 532 64224	2	Marking ring white
5	5322 532 64225	2	Marking ring blue
6	5322 256 94136	1	Probe holder
7	5322 255 44026	2	Soldering terminals
8	5322 462 54075	1	Protective cap
9	5322 268 14119	2	Pin
10	5322 264 24023	1	Spring loaded test clip
11	5322 320 14088	1	Cable assembly
12	5322 268 44019	1	BNC-connector
13	5322 462 44074	1	Cover
14	5322 256 94143	1	Probe shell assy
15	5322 218 64089	1	RC-assy + holder

6.2. Electrical parts

Item	Order number	Description
R2-R4	5322 100 10135	470 20 % 0.75 W
R3	5322 116 50536	464 1 % MR25
R5	5322 100 10143	1K 20 % 0.75 W
R7	5322 116 55212	252K 0.25 % MR34E
C2	5322 125 54003	Trimmer 60P 300 V
C3	5322 125 54051	Trimmer 3.5P
C4	5322 125 50051	Trimmer 18P 300 V
L1	5322 157 44035	Coil

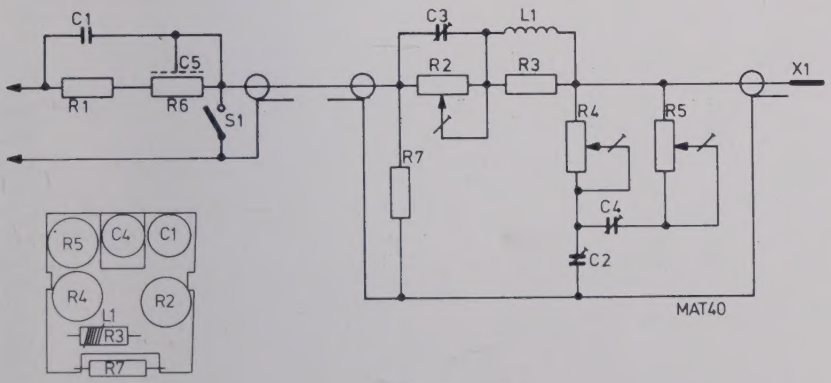

Fig. 11

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